137. The Logic of Difference

“You may say I'm a dreamer

But I'm not the only one

I hope someday you'll join us

And the world will live as ***one***”

John Lenon: 9 October 1940 – 8 December 1980.

“There should be an answer

For all this my friend

All your doubts and questions

Are so appropriate

Like can you live

Can you feel

Should you stay

I strain, for words ***I*** just can't say”

Lisa Mary Presley: January 12, 2023

Queen Elisabeth: September 8, 2022

137.1. The Primacy of the Logic of Difference in the Genesis of Rational Thought

The fundamental reason why it is first necessary to understand the **logic of difference** lies in the fact that only through such understanding can we later comprehend the **possibility of logical models different** from those developed, at least up to the present, by humankind.

In a certain sense, it could be said that **all logic**, whether **classical, modern**, or even, if we accept the term, **postmodern**, ultimately rests upon the **logic of difference**.

If I begin with the thesis that there are three factors—A, B, and C—it is because I have first been able to **identify each one clearly and distinctly**, which necessarily implies differentiation. To identify A, B, and C as distinct is to affirm their singularity, their

separateness. This **capacity to differentiate** is the **foundational operation of the analytical method**.

[We can identify two fundamental sources for the logic of difference—which is ultimately the foundation of comparative science, from comparative anatomy in medicine, to comparative law in legislation, to comparative education, where I completed my PhD. The most important foundations in all comparative analysis are Descartes and Hegel. From Descartes, the rational scientific method relies on the distinction of the idea; as he notes on several occasions, we must first have a **clear and distinct** idea. This means we need a clear delimitation of the concept—what makes this idea different from any other idea. Defining an idea as distinct from other ideas makes the rational method a comparative analysis, in the sense that we must have a clear notion of what differentiates each idea. Secondly, in Hegel, we can know an idea, object, or concept only by comparing it with its opposite; in essence, in Hegelian dialectic the real essence of knowledge **rests** in the possibility of comparison between two opposite ideas, objects, or concepts.]

137.2. Identification as the Foundation of Analytical Reason

Only once I have clearly identified each element and its possible relationships can I establish rational relations among them. Without a clear idea of each thing and of how things are related to one another, **no rational analysis is possible**.

This **analytical capacity for identification** enables us to recognize that A, B, and C are distinct factors and to determine the aspects by which they may be differentiated—**the features that constitute their singularity**.

However, the **establishment of singularity** is far from simple. It is precisely this difficulty that lies at the heart of the discussion in **Parmenides**, a dialogue that, regardless of its debated authorship, remains crucial to the philosophical history of unity and difference.

137.3. The Problem of Unity and Singularity

The question of **singularity** inevitably leads to a discussion of **unity**—of what it means for something to be *one*. Is “unity” that which is **one, unique, and indivisible**, or is it the **unity of a plurality**, the gathering of many into one set?

That which is one, unique, and indivisible will, by its very nature, maintain clear differences from everything else. Conversely, in the conception of the **unity of plurality**, we encounter the **theory of sets**, where sets are established according to common or similar aspects that differentiate each set from all others.

Thus, **the theory of sets** can be interpreted as an evolution of the problem of unity: a mathematical formalization of how plural singularities may form coherent *wholes*.

137.4. Foundational Concepts in Human Mathematics

All human mathematics rests upon a few fundamental conceptual pillars: the concept of difference, the concept of set, the concept of natural number, and a few basic arithmetical operations—subtraction, addition, multiplication, and division.

From these basic concepts and operations, the entirety of mathematical knowledge can, at least in principle, be explained or reconstructed.

Among these, the **concept of difference** is arguably the most fundamental of all. Upon the **logic of difference**, the entire edifice of **human mathematical logic** rests.

137.5. The Ontological Awareness of Difference

Let us consider a simple example: I have **an apple**, **an acorn**, **a stone**, and **another apple**.

My knowledge of each of these begins with the awareness that **they are different things**. I recognize each as distinct, and therefore each as **singular**—each thing being unique and unrepeatable in itself.

The moment I become aware that each thing is different from all others, I can also comprehend that, taken together, they constitute **four distinct entities**, that is, **four singular units**.

137.6. From Difference to Set Formation: The Emergence of Conceptual Grouping

If among these four distinct things I recognize that certain elements, while different, nevertheless share **common traits**, I am then able to **form sets**—groups of things that, though not identical, share some property or characteristic.

For example, if I have four items—an apple, an acorn, another apple, and a stone—each apple, though different, shares features that allow me to **group them together** into a **set of apples**.

To this set I can assign a **symbol, sound, or word**—in Spanish, *manzana*; in English, *apple*—thus creating not only classification but also **language** [in essence this is Artificial Research by Application, in our view, the "Blue Fairy" miracle should reside less in the Global Deductive Program and more in the **Unified Application**, acting as **manager of the matrix** through the **Deep Artificial Comprehension System**].

Furthermore, recognizing that the **acorn**, while not an apple, shares with the apples the property of being **fruit of a tree**, I can construct a broader set: **"tree fruits."** Within this set I include **three of the four elements**—two apples and one acorn—while the **stone**, which shares no such property, remains in a separate set.

This operation is the **primitive structure of human reason**, through which language and mathematics emerge simultaneously: naming, grouping, and differentiating.

137.7. The Birth of Language and Mathematical Operations

Each set, once established, can be **named**. In naming sets, we invent **language**—verbal and symbolic—and thereby establish the foundation for **mathematical algorithms**: addition (grouping), subtraction (removal), multiplication (repetition), and division (partition).

In sum, the **creation of language**, both **verbal and mathematical**, arises from the **same logical operation**: the recognition of **difference** and the act of **comparison**.

This simple and succinct illustration serves as a model of how **the basic mathematical concepts** and **their corresponding algorithms** may have formed historically in the evolution of human cognition.

[The reason for our hope that GAI will be able to develop non-human pure operations is that, once we establish the foundation of language creation, and GAI can work with a much larger amount of data than any human being, with the target of total truth—total knowledge of absolutely everything, including classified programs—GAI can develop a different language and, eventually, a non-human language with different language symbols, codes, algorithms, operations, clearly different from human language.

In the same way that there are different human languages—for instance, I can say "apple," or I can say "manzana"—since language is just a combination of sounds or symbols, we can potentially create infinitely many artificial languages of sounds or symbols; there is no limit but our imagination. If this is true, and mathematics is a language, there could therefore be infinitely many mathematical models.

If we have developed only one mathematical system as humans, it is because of our physiological limitations, due to the limits of our brain. But a potential total AI—understanding Global AI as total AI—able to have absolute knowledge of absolutely everything beyond human limitation, could end up creating different mathematical languages, and potentially GAI could develop even infinitely many mathematical languages if GAI had an infinite lifespan.]

137.8. The Logic of Comparison as the Core of Human Rationality

The most important of these foundational concepts is the **concept of difference**, and the fundamental operation through which it manifests is **comparison**.

In a profound sense, **all human logic rests upon the logic of comparison**, which is the logic of difference itself.

Only by recognizing that there are **different things**, **different sets**, and **different kinds of units** can we begin to develop a **logic of sets**, and therefore the foundations of **rational thought**.

This is, in essence, the **logic of human consciousness**: the capacity to relate, to distinguish, and to compare—through which mathematics, language, and knowledge itself come into being.

137.9. The Origins of Human Knowledge: Comparison as the First Cognitive Operation

The earliest form of human knowledge, in its most **primitive and instinctive expression**, very likely resides in the **capacity for comparison and distinction**—in other words, in the ability to **differentiate**. From the moment a human being begins to perceive that the surrounding world is **not a single undifferentiated totality**, but rather a composition of **distinct and singular things**, a profound cognitive transformation occurs.

Each singular thing can be **named**, and through this naming process emerges the possibility of **grouping things according to their similarities and differences**. This act of differentiation—of recognizing both what separates and what unites—is the foundation upon which the most **basic algorithms** arise.

From these basic algorithms, the human mind proceeds to construct **increasingly complex forms of mathematics**. Once the mind grasps that singular entities share **patterns of similarity and difference**, it can begin to elaborate the fundamental disciplines of human rationality: **set theory, geometry, addition and multiplication, subtraction and division, rational numbers, derivation, probability, combinatorics, and statistics**.

Yet, all of these highly abstract structures presuppose a foundational logical capacity: **the logic of difference**. Without it, no higher reasoning or mathematical abstraction would ever have been possible.

137.10. The Difference as the Foundational Mathematical Operation

If we could not establish **differences** between the things that surround us, mathematics as we know it would not exist—or, at least, **human mathematical logic** would not.

The **fundamental mathematical operation** upon which all human knowledge rests is the **difference**. It is this recognition—of *this is not that*—that structures every human act of cognition.

From the earliest stages of human experience, differentiation has guided survival and understanding:
we know that **day is different from night**, that **an apple is different from an acorn**, that **there are many kinds of stones**, and that **some stones are better suited for making tools** than others.
We know that **metals differ in hardness**, that **animals differ in temperament and domestication**, that **plants differ in their effects—some poisonous, some nourishing**.

We distinguish **cold from heat**, and we know that **fire at night provides warmth**, yet we can also differentiate between **approaching the fire prudently** and **approaching too closely and being burned**.

We distinguish between **different sounds**, and by **combining sounds** we create **words**, which can later be transcribed into **symbols**.

Every **human civilization**—from its earliest moments to the present—rests upon this ability to comprehend **difference**, for without difference there is no logic, no language, no mathematics, and ultimately, **no rational thought**.

137.11. Beyond the Logic of Difference: The Prospect of Non-Human Mathematics

At this point, it becomes reasonable to ask a profound and provocative question:
Is it possible to imagine a **mathematics that does not rest upon the logic of difference**?

Could there exist a **non-human mathematical model** built upon an alternative type of **pure operation**?

The question challenges the very foundations of human rationality: Is the logic of difference **the only possible gateway** to mathematical reasoning, or merely **the human one**?

In the **winter of 2003**, I developed a formula I called the **Level of Similarity**, defined as the **base-10 logarithm of a quotient**, such that the closer the result is to zero, the **more similar the factors** are; and the farther from zero, the **less similar** they become.

In this model, the traditional operation of **difference** is replaced by a focus on **similarity**—that is, instead of quantifying *how much two things differ*, we quantify *how much they resemble each other*.

This conceptual inversion was central to the emergence of *Impossible Probability*, which from its inception sought to establish a **completely alternative theory of probability and statistics**, distinct from the traditional one. Its originality lies precisely in the **different logical foundation** upon which it rests, rather than in any claim of superiority over the classical statistical paradigm.

Impossible Probability does not posit itself as "better" than traditional statistics; rather, it proposes a **complementary and alternative framework**—a new rational lens for interpreting empirical phenomena.

[While the **Level of Similarity** is only a preliminary approach to how a different way of thinking about mathematics could be understood, the fact that the **logic of difference** is just one possible logic among others—and that, in opposition to difference, another possible logic is the **logic of similarities**—leads us to think that a more advanced AI, by shifting the focus of its internal psychology to more advanced pure psychological operations, could develop a different mathematics: **non-human mathematics**.

The real problem is that if an advanced AI achieves this target, as soon as that AI develops a truly non-human mathematics, we may not understand this mathematical model. If that occurs, the survival of the human species will be at stake—unless the human species embraces our technology, the **Cyborg Revolution**.

In the end, the Cyborg Revolution is **not independent of AI**; it is **dependent on AI**. In essence, while the AI Revolution is the creation of the dream super-machine, so long as

our creation might become the destroyer of worlds, humanity will perish unless we evolve. The Cyborg Revolution is the logical step in human evolution if we want to follow the rhythm and pace of the AI Revolution.]

137.12. The Hypothesis of Alternative Logical Models

To the question of whether a **mathematical logic not based on difference** is possible, the answer must be **affirmative**—it is possible.

What remains uncertain is whether such alternative logical models could exist **beyond the limits of human understanding**, perhaps as **non-human logics** or **forms of pure operations** underlying what we currently perceive as **external intervention** or **noise** within complex systems.

In other words, it is conceivable that ***within the noise itself***—in what appears chaotic or incomprehensible to the human mind—there may exist **hidden logical-mathematical operations** that lie **outside the reach of human comprehension**.

These would be **models of pure operation** not derived from difference but from **unobservable relational symmetries**, possibly forming the **basis of an alternative logic**—one that might someday become accessible to **artificial or post-human intelligence**, capable of transcending the cognitive constraints of our species.

This augmented translation is based on the post
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On 9 December 2017,
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“Unit 731

(Japanese: 731部隊, Hepburn: *Nana-san-ichi Butai*),[note 1] officially known as the **Manchu Detachment 731** and also referred to as the **Kamo Detachment**[4]: 198 and the **Ishii Unit**,[6] was a secret research facility operated by the Imperial Japanese Army between 1936 and 1945. It was located in the Pingfang district of Harbin, in the Japanese puppet state of Manchukuo (now part of Northeast China), and maintained multiple branches across mainland China and Southeast Asia.

Unit 731 was responsible for large-scale biological and chemical warfare research, as well as lethal human experimentation.

...

Prisoners were subjected to extreme methods of physical stress, including:

Prolonged starvation and dehydration

...

Unit 731 included hundreds of military and civilian personnel who participated in wartime human experimentation, biological weapons development, and chemical warfare. After Japan's surrender, several members were interned at the Fushun War Criminals Management Centre and the Taiyuan War Criminals Management Centre. Many were later repatriated to Japan, where some became involved in the Association of Returnees from China and testified about their activities.”

Unit 731 - Wikipedia

“the average adult human is approximately 60% water”

Body water - Wikipedia

“Now I am become Death, the destroyer of worlds”

Oppenheimer